

COPING WITH SHIFTWORK

*Richard Komarniski
Grey Owl Aviation Consultants Inc.*

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1.1 INTRODUCTION

Would you bet on a race horse that was run hard, deprived of necessary rest, drank bad water, was fed old and moldy hay, and did not have a good daily exercise routine? While we would go to great lengths to make sure animals or pets that depend on us are well rested, eat a proper diet, and receive regular exercise, what do we do for ourselves?

Fatigue is the body's normal reaction to a physical or mental stress of prolonged duration. The onset of fatigue is insidious and the symptoms may not be recognized until the person has reached a high degree of fatigue. It is one of the main contributors to maintenance errors and must be addressed if we are to improve safety and reduce maintenance errors. This article will provide a basic understanding of fatigue and what we can do to reduce fatigue and its impact on our performance.

Family problems, financial difficulties, bad interpersonal relations, company conflicts, and pressure from your employers are all major stresses that can provoke fatigue. You need to be aware of these stress factors and keep them in perspective. Fatigue can affect our coordination and judgement in many ways that degrade the quality of our work. Classic case studies of maintenance errors due to fatigue include the Chernobyl and Three Mile Island nuclear plant disasters, the Boeing 737 forward fuselage section separation attributed to undetected corrosion, and the BAC 111 windshield which blew out because of the wrong size of fasteners.

The maintenance errors that contributed to these incidents all took place in the early morning, when individual fatigue level is highest due to our naturally occurring daily body cycle, also known as circadian rhythms.

If our circadian rhythm is disrupted by shift work or air travel across different time zones, for example, then our sleep patterns are likely to be disturbed leading to fatigue.

1.2 BACKGROUND

1.2.1 Symptoms And Causes Of Fatigue

The symptoms of fatigue can come on slowly. It's important that we recognize the symptoms and be aware of their effects. Common symptoms are:

- Reduced attention, including the reduction of visual scanning and performance
- Becoming less aware of performance
- Reverting to "old" habits
- Increased irritability
- Development of a "don't care" attitude

1.3 METHODOLOGY

- Some of the common causes of fatigue are listed below. Many of these causes result in a near term reduction in individual energy level which leads to the onset of fatigue.

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- Large temperature variations - excessive temperature can lead to heat exhaustion. Lower temperature, without proper clothing, can lead to hypothermia.
- Poor Diet
- Prolonged or highly intense stress
- Disorganization
- Smoking - A cigarette is the quickest way to reduce oxygen delivery to your tissues. Less oxygen means less energy.
- Ruts – No challenges.
- Overweight - If you are 20 percent over your target weight, you may have found the culprit behind your fatigue.
- Coffee - A cup of java to get you going in the morning may be why you are gone in the afternoon. Coffee triggers an insulin reaction that may leave you with a mild case of low blood sugar at the end of a manic, energy-packed hour. Additionally, the caffeine in coffee can play havoc with your body's circadian rhythms.

1.4 DISCUSSION

The three most important ways of dealing with fatigue are regular sleep, a well-balanced diet, and a regular exercise program.

1.4.1 Sleep

Getting a good night's sleep is vital to help reduce maintenance error. A lot of aircraft maintenance is performed at night. Physiologically and mentally, we are most alert during daylight hours and prefer to rest or sleep at night. Our natural body rhythm causes a slow down to occur between 1 and 4 a.m., and again, though not as severe, about 12 hours later. We are at our peppiest from 9 to 11 a.m. and 7 to 9 p.m. - unless your sleep debt runs over.

With rotating shifts clockwise (days to evenings to nights) instead of the more traditional counterclockwise schedule, employers could take better advantage of a person's natural 25-hour sleep cycle. When job requirements disturb this pattern, work performance deficits can follow. In most accidents in which maintenance errors played a part, the faulty maintenance work which contributed to the accident was performed during the night shift.

Operators should carefully examine work assignments for their effects on technicians and their work. Physically demanding tasks should not be followed by tedious work requiring intense concentration.

A long history of research shows that technician vigilance declines rapidly on these tasks and errors can and do occur. Old-style inspection devices rely heavily on technicians' skill in manipulating equipment and in detecting and interpreting subtle instrument indications. Couple these difficulties with a fatigued technician, and the probability for error increases dramatically.

1.4.2 Diet

The foods you eat can either enhance your mental alertness or dull your mind and slow down your reactions.

One of the most important rules to follow to increase stamina and reduce fatigue is that your body needs its "fuel" in moderate doses throughout the day to maintain an optimal energy level. By eating four to five times a day, you avoid running low on energy.

Eating less, but more frequently, makes good sense for another reason. The larger the meal, the more time it takes to digest. And the process of digestion requires increased blood and oxygen flow to the stomach and intestines. This represents energy which will not be available for the brain and muscles to use.

Carbohydrates, such as foods rich in sugars and starches, spend less time in the stomach than do foods high in fats or proteins. To maintain maximum energy, your basic “fuel” mix should be 60 percent carbohydrates, 15 percent protein, and no more than 25 percent fat daily.

Dehydration also can cause fatigue. When your body loses fluid, you tend to get tired.

1.4.3 Exercise

A lifestyle that includes regular exercise can enhance individual performance. Sensible exercise also improves circulatory efficiency and cardiovascular conditioning, which in turn will improve your endurance.

While all aspects of fitness are important, aerobic fitness seems to have the greatest impact on the quality of sleep and stress management. Exercise provides lots of physical benefits, but it also contributes to an overall sense of well being

Rather than reaching for a candy bar the next time you’re experiencing an energy shortage, reach for your walking shoes. A brisk 10-minute walk should provide you with a significantly better energy boost than any candy bar. And the best part is that unlike a candy bar, walking won’t make you a fatigue victim an hour later.

Finally, regular, vigorous exercise makes an individual more capable of handling various types of physical and mental stress.

1.5 CONCLUSION

We are all in this industry to provide preventative maintenance on the aircraft. It is time to be aware and prevent these areas in our life from effecting our health. Coping with fatigue starts by looking after ourselves. If you maintain your aircraft the same way you look after yourself it may never see the air again.

1.6 REFERENCES

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